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United States
Environmental Protection
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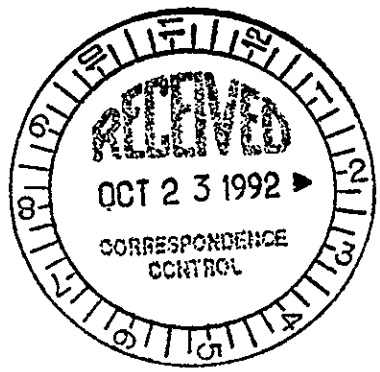
EPA



October 15, 1992

Eric D. Goller
U.S. Department of Energy
P.O. Box 550, A5-19
Richland, Washington 99352

Re: 100 Area Soil Washing Treatability Test Plan Review Comments

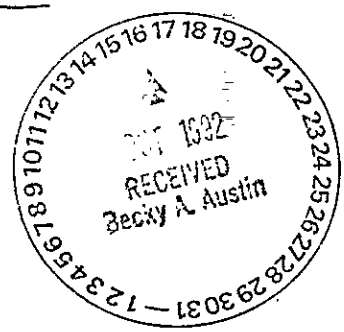
Dear Mr. Goller:

Enclosed are the U.S. Environmental Protection Agency's (EPA) comments on the 100 Area Soil Washing Treatability Test Plan.

Please contact me at (509) 376-8631 if you have any questions.

Sincerely,

Dennis A. Faulk
Operable Unit Manager



Enclosure

cc: Becky Austin, WHC
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Rich Hibbard, Ecology
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Administrative Record, 100-BC-1 Operable Unit

GENERAL COMMENTS

The 100 Area Soil Washing Treatability Test Plan presents the general methodology for testing soil washing treatability to evaluate the performance of physical separation systems and chemical extraction methods for removal of chemical and radiological contaminants from soils at the 100 areas. In general, the test plan follows EPA guidelines for conducting treatability studies under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 (EPA 1989a). However, several issues remain that need to be addressed in this test plan.

- Remedy screening and remedy selection treatability study goals are not clearly defined. Each level of treatability study requires appropriate performance goals, which should be specified before the test is conducted. Laboratory screening of treatability study goals (stage I in this study) allows for a go/no-go decision. This goal may be a 50 percent reduction in toxicity, mobility, or volume, which would indicate the potential to achieve greater reduction (e.g., 90 percent) through additional refinement of the study. Bench and pilot-scale testing goals are those needed to select or implement the technology or both. The goal for the bench and pilot-scale testing (stage II in this study) may be set at a 90 percent or greater reduction in toxicity, mobility, or volume of the principal constituents (EPA 1989b). Pre-record of decision (ROD) treatability study goals should be based on the anticipated performance standards to be established in the ROD. If the selected treatment technologies or treatment trains generally achieve a 90 percent or greater reduction in concentration, mobility, or volume of individual contaminants of concern, this goal complements the site-specific cleanup goals,which are based on a site risk assessment or applicable or relevant and appropriate requirements (ARARs).

- The performance levels presented in Table 1-1 for on-site disposal of treated soil are not justified based on the site risk assessment or ARARs for the intended future land use of the 100 Area waste sites. The text should clearly explain whether the selected performance levels are based on site-specific risk assessments or ARARs and whether they are for interim remedial action or for final remedy selection.

- The test plan does not clearly outline tasks to be completed by the contractor to screen the technologies for stage I and stage II studies. This identification of tasks for physical separation and chemical extraction treatment options is important since this is the basis of treatment and pricing decisions for successful completion of this study.

- The test plan does not clearly state whether a detailed work plan as suggested by EPA (1991) will be submitted by the test contractor or whether the test contractor will submit only the procedures and schedules for soil washing treatability. The contractor's work plan should include test objectives, experimental design and procedures, equipment and materials,

reports, a sampling and analysis plan, and treatability data interpretation for regulatory approval before initiating the test tasks.

- There are a variety of physical separation techniques and chemical extraction methods for soil washing treatment for cleanup of radiologically contaminated soils (EPA 1988). Selection of these techniques for soil cleaning is site-specific and depends on the properties of the contaminated soil and concentration of radionuclides in each particle size fraction. The initial screening study should evaluate each one of the physical separation technologies and chemical extraction methods or select a combination of technologies for an aggressive study in stage II so that the technology selected will be easily implementable and cost-effective. For example, a fluidized bed concept should be evaluated for separation of soil fractions in a single reactor instead of following sequential steps for size separation in multiple reactors; this will reduce operational problems and treatment cost. Similarly, a fluidized bed can be tested along with a fixed bed (heap leaching) to evaluate the effectiveness of extraction of contaminants from the leachate.

- It is not explained why extracted materials will not be recycled in the heap leaching tests. Heap leaching tests should be evaluated both as a once-through process and as a recycling system to evaluate their ability to adsorb/desorb contaminants during leaching. Also, heap leaching tests should be evaluated both as a continuous and a batch system. Batch extraction allows better control over extraction variables such as retention time and solvent-to-feed ratio and provides more assurance that solids meet disposal requirements.

- Because small volumes and inexpensive reactors (e.g., bottles or beakers) are used, laboratory or bench-scale tests should be used to test a relatively large number of both performance and waste-composition variables. The test plan should also evaluate a treatment system made up of several technologies and generate limited amounts of residuals for evaluation.

- The test plan states that Westinghouse Hanford will be responsible for obtaining soil samples for treatability testing; however, collecting representative soil samples for treatability testing is not discussed. "Representative" samples should be collected from the site. This determination of representativeness is important since this agreement is the basis of treatment and pricing decisions. A field sampling plan following EPA guidance (EPA 1991) should be developed for collecting representative soil samples from the site for the treatability test.

- The schedule shown in Figure 9-1 is missing information that includes: contractor selection, work plan submittal by the contractor, approval of the work plan by regulators, sample collection from the field, treatability study execution for stage I and stage II, and review of stage I results by regulators.

REFERENCES

EPA 1988. Technological Approaches to the Cleanup of Radiologically Contaminated Superfund Sites. U.S. Environmental Protection Agency. EPA/540/2-88/002. August 1988.

EPA 1989a. Guide for Conducting Treatability Studies Under CERCLA: Interim Final. U.S. Environmental Protection Agency. EPA/540/2-89-058. December 1989.

EPA 1989b. Treatability Studies Under CERCLA: An Overview. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Directive 9380.3-02FS. December 1989.

EPA 1991. Guide for Conducting Treatability Studies Under CERCLA: Soil Washing, Interim Guidance. U.S. Environmental Protection Agency, EPA/540/2-91/020A. September 1991.

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Subject: 100 AREA SOIL WASHING TREATABILITY TEST PLAN REVIEW COMMENTS

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